

Amendment to Claims

This listing of Claims will replace all prior versions and listings of claims in this Application.

Listing of Claims

Claim 1. (CURRENTLY AMENDED) A method of compressing a document, comprising:
preparing an encoded representation of a document by scanning the document to
provide a scanner output;

classifying the scanner output as belonging to a class of document taken from the
document classes consisting of smooth, text, graphics and image, including setting an order of
priority to the classification of smooth > text > graphics > image; and
adaptively compressing the scanner output as a function of the class of the
document.

Claim 2. CANCELLED

Claim 3. (ORIGINAL) The method of claim 1 wherein said classifying includes:
generating a histogram of the scanner output and identifying maximum and
minimum values for the scanner output;
selecting contrast threshold values to identify a text class document and a smooth
class document; and
using a sequential classification scheme:
classifying a document as smooth when the difference between the maximum and
minimum histogram value is below the contrast threshold value for smooth class documents;

classifying a document as text when $|c_1 - c_2| > 128$ and $p >$ the contrast threshold value for text, wherein two dominant values, c_1, c_2 , are found and the cumulative probability, p is the summation over $[c_1 - A, c_1 + A]$ and $[c_2 - A, c_2 + A]$;

classifying a document as graphic when the number of dominant values n belongs to $[1, M]$ and the cumulative probability p is the summation over all $[c_k - A, c_k + A]$ for $k=1, \dots, n) >$ the contrast threshold value for graphics;

otherwise, classifying the document as an image for any scanner output not already classified.

Claim 4. (ORIGINAL) The method of claim 1 wherein said adaptively compressing includes compressing the scanner output using a compression scheme taken from the group of compression schemes including, singular mode, binary mode, M-ary mode and continuous mode.

Claim 5. (ORIGINAL) The method of claim 4 which further includes compressing smooth class scanner output using singular mode compression; compressing text class scanner output using binary mode compression; compressing graphic class scanner output using M-ary compression mode and compressing image class scanner output using continuous mode compression.

Claim 6. (ORIGINAL) The method of claim 4 which further includes post processing text class scanner output using a low-pass filter.

Claim 7. (CURRENTLY AMENDED) A method of compressing a document, comprising:

preparing an encoded representation of a document by scanning the document to provide a scanner output;

classifying the scanner output as belonging to a class of document taken from the document classes consisting of smooth, text, graphics and image, including:

generating a histogram of the scanner output and identifying maximum and minimum values for the scanner output;

selecting contrast threshold values to identify a text class document and a smooth class document; and

using a sequential classification scheme:

classifying a document as smooth when the difference between the maximum and minimum histogram value is below the contrast threshold value for smooth class documents;

classifying a document as text when $|c_1 - c_2| > 128$ and $p >$ the contrast threshold value for text, wherein two dominant values, c_1, c_2 , are found and the cumulative probability, p is the summation over $[c_1 - A, c_1 + A]$ and $[c_2 - A, c_2 + A]$);

classifying a document as graphic when the number of dominant values n belongs to $[1, M]$ and the cumulative probability p is the summation over all $[c_k - A, c_k + A]$ for $k = 1, \dots, n >$ the contrast threshold value for graphics;

otherwise, classifying the document as an image for any scanner output not already classified[.]; and

adaptively compressing the scanner output as a function of the class of the document, including compressing the scanner output using a compression scheme taken from the

group of compression schemes including, singular mode, binary mode, M-ary mode and continuous mode.

Claim 8. (ORIGINAL) The method of claim 7 which further includes compressing smooth class scanner output using singular mode compression; compressing text class scanner output using binary mode compression; compressing graphic class scanner output using M-ary compression mode and compressing image class scanner output using continuous mode compression.

Claim 9. (ORIGINAL) The method of claim 8 which further includes post processing text class scanner output using a low-pass filter.

Claim 10. (CURRENTLY AMENDED) A compression apparatus for compressing scanned data, comprising:

a scanner for scanning a document and generating a scanner output;

a block-based classifier for classifying the scanner output as belonging to a class of documents taken from the document classes consisting of smooth, text, graphics and image, including a classification mechanism for classifying a document, having a histogram generator for generating a histogram of scanner output, and a threshold selecting mechanism for selecting contrast threshold values associated with at least two classes of documents;

an adaptive compressor for compressing the scanner output according to a compression mode as a function of the class of document;

a storage mechanism for storing compressed scanner output and compression mode

information; and

a decompressor for decompressing compressed scanner output in accordance with the compression mode information.

Claim 11. (ORIGINAL) The apparatus of claim 10 wherein said block-based classifier includes an order of priority for the classification of smooth > text > graphics > image.

Claim 12. CANCELLED

Claim 13. (ORIGINAL) The apparatus of claim 10 wherein said adaptive compressor includes compression algorithms, including a singular mode compression algorithm, a binary mode compression algorithm, a M-ary mode compression algorithm and a continuous mode compression algorithm; and wherein smooth class scanner output is compressed using singular mode compression; text class scanner output is compressed using binary mode compression; graphic class scanner output is compressed using M-ary compression mode and image class scanner output is compressed using continuous mode compression.

Claim 14. (ORIGINAL) The apparatus of claim 13 which further includes a low-pass filter for use with text class scanner output during post-processing.